Mustafa **Chasmai**

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Education

Ph.D. in Computer Science — **University of Massachusetts, Amherst**
Supervised by Prof. Subhransu Maji | Computer Vision — *2023 - current*

Bachelor of Technology (B.Tech) — **Indian Institute of Technology Delhi**
Computer Science and Engineering, Major GPA: 9.35 — *2019 - 2023*

Internships

Explainable AI (XAI) — **Sony Group Corporation, Japan**
Deep Learning Research Intern | Responsible AI | Attention Mechanisms — *May 2022 - July 2022*

- Developed **reusable** & **modular** APIs for 3 XAI methods with rigorous tests and integration in nnabla.
- Implemented SOTA models of DenseNet, ResNext with attention branch on NNC, Sony's GUI for DNNs.

Unsupervised Domain Adaptation for Action Recognition — **University of Sheffield, UK**
Prof. Haiping Lu, CS Sheffield | Transfer Learning | Adversarial Training — *May 2021 - Aug 2021*

- Worked on core feature enhancement of PyKale, having **unified API** for Domain Adaptation methods.
- Integrated TA3N, SOTA in **Unsupervised Domain Adaptation for Action Recognition**, into PyKale.

Farm Boundary Detection — **Satsure, Bangalore**
Data Science Intern | Instance Segmentation | Remote Sensing — *Dec 2020*

- Worked on obtaining clear and accurate boundaries for Indian farms using **Sentinel 2 Satellites** data.
- Built complete pipeline for extracting farm vectors using **Mask-RCNN** for **instance segmentation**.

Automated Box Counting — **Flytbase, Pune**
AI and Robotics Intern | Deep Learning | Computer Vision — *Apr 2020 - July 2020*

- Box delineation in unstructured stacks for drone-based **automated inventory** management system.
- **Ensemble model** combining Object Detection, Segmentation, Corner Detection and Edge Detection.

Publications

Learning Generalizable Policies in Domains with Rich Object Interactions — **CoRL '22 W, AAAI '24**
Mustafa Chasmai, Shreshth Tuli, Mausam, Rohan Paul — [paper], [under review]

Robust Prototypical Few-Shot Segmentation with Regularized Neural-ODEs — **MICCAI '22, TMI '23**
Prashant Pandey, Mustafa Chasmai*, Tanuj Sur, Brejesh Lall* — [paper], [paper]

Weakly Supervised Zero and Few Shot Segmentation with Instance-Aware Prompting — **ICME '23**
Prashant Pandey, Mustafa Chasmai*, Monish Natarajan, Brejesh Lall (* equal authorship)* — [paper]

From Forks to Forceps: A New Framework for Segmentation of Surgical Instruments — **WACV '23**
Britty Baby, Daksh Thapar, Mustafa Chasmai, Tamajit Banerjee, Subhashis Banerjee, Chetan Arora [paper]

Representation Learning Using Rank Loss For Robust Neurosurgical Skills Evaluation — **ICIP '22**
Britty Baby, Mustafa Chasmai, Ashish Suri, Subhashis Banerjee, Chetan Arora — [paper]

A View Independent Classification Framework for Yoga Postures — **SNCS '22**
Mustafa Chasmai, Nirjhar Das, Aman Bhardwaj, Rahul Garg — [paper]

Key Course Projects

- **Robot Localization** | Prof. Rohan Paul | Kalman Filter | HMM | State Estimation | Data Association |
- **Person Re-Identification** | Prof. Chetan Arora | Metric Learning | Triplet Loss | Self-Ensembling |
- **Noisy Caption Reader** | Prof. Parag Singla | Encoder-Decoder | LSTM | Residual Network | Res-50 |
- **Traffic Density Estimator** | Prof. Rijurekha Sen | Homography | Background Subtraction | OpenCV |
- **Multi-Player Game and Simulation** | Prof. Rijurekha Sen | SDL | Constrained Travelling Salesman |

Miscellaneous

- **Technical Skills** | Python, C++, Java | Pytorch, Pandas, ScikitLearn | Google Colab, HPC, GPT-3.5 |
- **Fellowships & Awards** | IITD Top 7% (3 sems) | OCSC camp for IPhO | KVPY | INSPIRE | AIR 91 JEE'19 |
- **Extra Curricular** | Student Mentor | AI-ML club | Photography | Physics & Astro | Rubik Cube (20×20) |
- **Research Interest** | Meta Learning (Few & Zero shot) | Vision Language Models | Foundation Models |